

Wood-Jones, F., and Porteus, S. D. *The Matrix of the Mind*. Honolulu, 1928. University Press Association. Pp. 457, with 80 figures. Price 20s.

THE aim of this book is to blend and reconcile the viewpoints of two sciences which have the same physical structures as a basis, neurology and psychology. It consists of two parts. The first forty-three chapters are written by Professor Wood-Jones whose interests are more specially anatomical and deal with the developmental story of the brain; the last twelve are written by Professor Porteus whose interests are more psychological and treat of the evolution of human behaviour. The contributions of the two authors are far from equal in value.

Professor Wood-Jones, in limpid English, makes the developmental story of the brain more thrilling and dramatic than any novel could be.

First is the phase of differentiation. The primitive single-celled organism of dual function, sensory and motor, gives way to organisms with both sensory and motor cells. Certain skin sensory cells take on a middleman function and form a system of intercalated nerve cells. The invertebrate chooses these from the front of his body and spoils his future; the vertebrate tries again, wisely chooses a strip of the skin of his back and makes progress. These cells are tucked in to form a sunken tube below the skin whence they came, and this becomes the nervous system. This is naturally larger at the fore-end of the organism which is the first to meet the environmental shock and which also bears the long-distance sense-receptors. It is here that the pallium or mantle brain develops in the lower vertebrates as twin bubbles blown off the back of the neural tube, to reach its culmination in man.

Next is the phase of pallial representation. Smell, the sense that first meets and knows of outside things, is the first to be represented in the pallium, the first to acquire "awareness." Soon follows "awareness" of the snout and face. Once the animal leaves the earth and takes to the air, the water or the treetops, smell ceases to be of first importance. Some arboreals—especially among the marsupials—remain slaves to scent and the smell brain. But others, including the ancestors of man, begin to use the hand as the testing area of the body. This can be carried out under the inspection of the eyes; and a co-ordination between hand and eyes leads to a wider knowledge and consequent pallial "awareness" of the rest of the body. Another fortunate experiment of the higher mammals—which the marsupials failed to make—was the bridging of the pallial bubbles by the corpus callosum, a cable of nerve fibres, whose function is to correlate the two sides of the body within the pallium.

The thread is now taken up by the second author. Though Professor Porteus is faintly contemptuous of the Behaviorists, his viewpoint, as far as it can be understood, is somewhat similar. If Behaviorism be considered as the physiological approach to mind, that of Professor Porteus is more static and anatomical. It culminates in the naïve suggestion—based on work by Berry and himself—that the correlation between size of head and mental capacity is sufficiently close to be of practical significance. This is a suggestion to which disproportionate importance has been attached of late by the Australian school of psychiatry.

As perhaps the best and simplest résumé of the phylogenetic history of the nervous system, this book should be of great value to biologists, psychiatrists, eugenicists, and others interested in the biological basis of mind. But it cannot be considered a formidable attempt to bridge the gap between brain and mind.

H. HARRIS.

PAMPHLETS

Eugenic Sterilization in California. Paul Popenoe. Reprints from the *Journal of Social Hygiene*.

4. *Changes in Administration.*—There have been wide fluctuations in the amount of sterilization of the insane from year to year—chiefly for administrative reasons. Since 1920 there has been a steady rise. The tendency has been to sterilize fewer chronic cases and more first admissions. There has been a slight increase in the sterilization of patients with no near relatives affected, and a marked increase of single women sterilized. These increases appear to be due to the growing realization that the insane do not make good parents. More of the relations of patients, and even of the patients themselves, now desire sterilization.

5. *Economic and Social Status of the Sterilized Insane.*—Insane married men have a higher economic status than the single, whether sterilized or not; and more of the economically dependent have been sterilized than of those in comfortable circumstances. The largest group among the sterilized is made up of unskilled labourers. In economic status the sterilized insane average definitely lower than the total population of the State, and very much lower than a group of 525 fathers of "superior children." Half of the sterilized males fall in classes that contributed virtually no "superior children"; half of the fathers of the "superior" are in classes so high as to be scarcely represented at all among the sterilizations.

There are three or four times (at least) as many mental diseases in the ancestry of the sterilized insane as in that of the "superior children"—great wits to madness are not near allied, and there is little danger of sterilization preventing the birth of the valuable.

E. M.

Occupational Analysis. The Study of Aptitudes and Attainments necessary for success in different kinds of employment. Issued by the National Institute of Industrial Psychology.

If industrial efficiency is to be secured, and if waste of human energy is to be avoided, then some attempt must be made along the lines indicated in this Report, to guide entrants into industrial life into those occupations for which their mental and bodily capacities, which vary so much in different individuals, naturally fit them.

The disharmony which under our present haphazard industrial system is the outcome of the "round peg in the square hole," is a constant source not only of economic loss, but of waste of human energy, and also of industrial unrest.

It is evident, however, that before any occupational adviser can give useful guidance or advice to entrants into industrial life, he must himself possess some working knowledge of the varying demands made by different occupations, and different industrial processes on the mental and bodily aptitudes of the individuals whom it is his duty to advise concerning their industrial career.

The Report now issued by the Institute represents an important forward step in the method of collecting and codifying the data which must be available before any really useful guidance can be given.

When, by the wider application of the kind of knowledge outlined in this Report, some degree of harmonious adaptation has been brought about in industrial life, between the human element and the industrial environment, then the question will arise whether, and to what extent, the better organization of industry from the human element point of view is calculated to promote progress on eugenic lines, especially in that section of the population which is engaged in industry.

It will be generally agreed that successful adaptation between the workers and a changing industrial environment will promote the interests of the *present* generation of industrial workers, and will thereby benefit the nation.

Whether it will so influence the differential birth-rate as to produce a larger volume of natural aptitude on which the nation can draw in the *next* generation, is the question of main interest to the eugenicists when studying this problem.

It seems reasonable to assume that environmental influences, economic and social, which tend to relieve the burden of parentage and thus to promote increased fertility among the higher grade workers—that is, which tend to increase the number of children in the families of skilled and capable, as compared with the families of unskilled and ineducable workers—*will* exercise a beneficial influence on the quality of the next generation.

The problem, however, of the influence of environmental conditions on fertility is a complicated and difficult one. The time to assess the extent of this particular influence in improving the quality of the population will arrive when the status of the skilled industrial worker, as against that of the unskilled, has been improved, and when increased harmony in industrial life has been brought about, and is working on a large scale.

C. J. BOND.

The Present Status of Eugenics. Professor Raymond Pearl. Hanover (U.S.A.), 1928. Sociological Press. Pp. 20.

SELF-INTEREST is, according to Professor Pearl, the driving motive of eugenicists, whose whole propaganda is unscientific. But Professor Pearl—again according to Professor Pearl—is the pure, disinterested scientist, only anxious to tell the public how they are misled in the name of Mendel.

He demonstrates his own impeccable science by expanding that *American Mercury* article which Mr. Gun answered in our last issue. But he is here forced to admit his previous statistical fallacy, and to acknowledge that the proportion of great sons produced by eminent fathers is far greater than the proportion produced by the general population. He then jumps neatly out of the frying-pan into the fire; for he argues that if eugenicists had bred only from the 'best people' for the last two or three thousand years, 95 per cent. of the great men would never have been born! He forgets that those 'best people' could easily have peopled the world without the assistance of the mediocre and defective, and would therefore have given rise (on his own calculations) to a far higher proportion of genius. Not one, but scores of Newtons and Shakespeares would have been born.

And the Professor is believed to be a statistician!

Alternatively to this argument he suggests that the great sons of eminent fathers are the product of an advantageous environment—quite disregarding the number of great men who, on his own showing, have been reared in ordinary or positively bad conditions! No. Professor Pearl, you cannot have it both ways: the outcropping of genius from depressing surroundings is the best instance possible of the value of heredity.

He also makes a Mendelian attack upon the theoretical basis of eugenics, arguing that like does not produce like and almost inferring that genius is produced by the marriage of mental defectives, amentia by the marriage of geniuses!

Could he exercise just enough humility to enable him to understand the scientific reasons of the popular adage that like produces like, he would have saved himself a considerable deal of shrill posturing, the aim of which seems to be to revive the 25-year-old fallacy that the Mendelian discoveries are unfavourable to the theory of selection. Modern genetics, so far from undermining the stockbreeder's confidence in selection, has exposed the mechanism he is applying and has proved that his confidence is well founded. In arguing from the analogy of Johannsen's beans that eugenists ought to judge men by their families rather than by themselves, the Professor is simply repeating one of the main teachings of this Society!

One is tempted to answer his charge of "self-interest" with the counter-charge of intellectual dishonesty. For instance, when he was in England last year, he stated at one of the meetings of this Society that Shakespeare's parents were poor peasants. Afterwards the present reviewer quietly warned him that Shakespeare's father was a prosperous, vigorous alderman, and his mother of noble birth. He apparently accepted the correction, but now writes: "If an observable tendency in Shakespearean commentary in England continues at its present pace much longer I judge it will ultimately appear that Shakespeare's father was an even greater man than Shakespeare himself was"! E. M.

Sterility: Analysis of Cures and Failures.

R. L. Dickinson, M.D. and W. H. Cary, M.D. Published by Committee of Maternal Health. New York. Pp. 16.

THIS paper consists of an analysis of 300 unselected cases of sterility. Its chief importance lies in the stress laid upon the responsibility of the man. The authors have evolved a functional test for seminal efficiency, which is based on the view that this efficiency depends on the conditions which are encountered in the female genital passages. An hour after coitus the female patient is asked to visit the physician who takes specimens of semen from the vagina and from "all levels of the cervical mucus to the internal os." The chief conclusions of the paper are:

(1) That the sterile woman has one chance of five of cure. In favourable circumstances, when the seminal efficiency of the husband has been established, the physician should not lead the wife to hope for more than one chance of cure in three, while in cases in which the fallopian tubes are not patent, the chances of cure are not better than one in seven.

(2) "Semen defects appear to account for one-third of sterile marriages, one-fourth of these defects offering hope of betterment. Adding his contribution of venereal infection, may bring the husband's responsibility up to one-half and charges up to him the least curable of the wife's sterilities, tubes sealed by inflammation."

C. P. B.

PERIODICALS

American Journal of Physical Anthropology

Vol. X, Nos. 2 and 3, Vol. XI, Nos. 1 and 2. 1927-8.—McMurrich and D. J. Morton both continue the tradition of this journal in their studies of the morphology of the skeleton of the foot in its relation with human evolution. Morton thinks man's erect posture a modified inheritance from erect pro-anthropoid arboreal habits of brachiation. Man shows specially clear affinities with *Dryopithecus* and thence the apes have diverged with more arboreal, the human stocks with more terrestrial characters. Hrdlička gives a fairly long bibliography of the anthropology of the American negro. V. S. Appleton shows that certain critical periods of retardation of growth of boys in East China are not noticeable among the East Chinese boys brought up in

Hawaii, and that the latter grow better and are somewhat different from home-staying Chinese even when adult. These differences are, in his opinion, due to the better sanitary conditions of Hawaii.

Larsen and Godfrey discuss the sacral pigment spot in its relation to inter-racial crosses. They believe that the inherent factors of it occur in all races but in different degrees, and are not confined to 'Mongolian' types, as has been thought. C. T. J. Dodge, studying the growth of negro babies in U.S.A., has occasion to emphasize that the stock is as yet by no means acclimatized to the north. Bernstein and Robertson suggest the investigation of racial character by measuring with a fine balance the weights of a counted number of hairs of determinate length. The average weights for 20 "Mongoloids" was

4.95 mg., for 20 "Negroids" 2.7 mg., and for 20 "Caucasians" 3.1 mg. The hair of negroids contains many large air bubbles. Straus finds that the pelvis is larger in whites than in negroes, and studies the minutiae of sex differences.

Papez publishes a very detailed study of the brain of the late Mrs. Helen H. Gardener, a descendant of the Williams-Cromwell family of the sixteenth century. Middleton Shaw points out that the fifth cusp is far more developed on the second lower molar tooth among Dr. Broom's 'Bush-Australoid' types in South Africa and also among Bantu than it is among pure Bushmen. Hrdlicka has begun collecting data concerning children going 'on all fours.' Todd, Blackwood, and Beecher discuss skin pigmentation, but continue to work with colour tops and do not mention Dr. Shaxby's methods. M. Hellman shows that the growth of bone to replace cartilage in the epiphyses of the hand is specially active in girls of 12½-14, which is a period following completion of the dentition of youth and a period of greatest growth in stature.

H. J. F.

American Mercury

February. A very biological issue, this. Mr. Maynard Shipley provides some pleasant quotations from the writings of eminent 'fundamentalists,' Professor Raymond Pearl continues his studies on alcohol and longevity, Dr. Maurice Fishberg writes on "The Tuberculosis Game." He acutely analyses the inconsistencies and rhetorical lack of science of the 'anti-bug' crusaders, demonstrates that infection plays a negligible part in the incidence and death-rate of tuberculosis, and points out that both were falling rapidly long before the hygiene era. Professor Pearl, from a study of over two thousand autopsies, supports his previous evidence that moderate drinkers are at least as good lives as total abstainers. The mean age of death of heavy drinkers is slightly, but definitely, below that of the others.

E. M.

Archiv der Julius Klaus-Stiftung

Band II, Heft 1. *Club-foot and its inheritance.* Dr. W. M. Müller.—Forty pedigrees of club-foot are given, usually extending through three or four generations. In one family it was clearly inherited as a dominant, occurring on both feet in eleven individuals of both sexes in four generations, as well as another who showed it slightly and transmitted the condition. In a number of families it appeared as a recessive, but was considered to be too infrequent to be a single factor recessive. In yet other cases it was clearly not inherited, but produced by some condition before or during birth. The inherited type may occur before or after birth, and is believed to be due

to spastic muscular contraction resulting from an inherited nervous derangement.

Dr. F. Schönenberger gives three pedigrees of atrophy of the optic nerve. The first pedigree, containing eleven affected individuals, follows the rule of a sex-linked character recessive in the females. The second family follows the same rule, but one female developed the condition, while in the third family only a brother and sister show it, all the other members through five generations being free from it.

Inheritance of senile cataract is studied by Dr. B. Garfunkel in twenty-nine families, in seventeen of which it only occurs in one generation. Its inheritance is that of a simple Mendelian recessive. Dr. C. Gredig describes a family in which megalocornea was inherited as a simple dominant through four generations. In two previously described pedigrees it is a sex-linked recessive. That the same character can be inherited in different ways in different families, in other words, that different elements of the germplasm can undergo the same change, is already known in other cases.

Band II, Heft 2 also contains three papers on the inheritance of human abnormalities, these papers coming from the University Eye Clinic of Professor Vogt in Zürich. Seven extensive pedigrees of total colour blindness are given by Lina Peter. In thirty-six families the numbers of children are 229 normal, 62 affected, and 15 probably affected, which is close to the 3:1 ratio expected for a simple recessive. In many of these families the parents were related. Partial colour blindness and aniridia also occurred in certain branches. Dr. Louis Bollag makes a study of inheritance of mixed eye-colours which are in various ways intermediate between brown and blue. It was found in twenty-five families that these do not segregate into brown and blue, but usually into the two parental eye colours together with certain intermediates if the eyes of the parents are very different. In the few cases where brown and blue eyes segregate, the colours produced are not pure, and where the parental irides are of mixed colours only 42.5 per cent. of the children resemble the parents. An hypothesis of multiple modifying genes is necessary to explain these results.

The inheritance of star cataract is studied by Dr. A. Romer, who finds the condition in ten members of a pedigree numbering 42. It is inherited as a simple dominant. R. R. G.

Archiv. für Rassen-und Gesellschaftsbiologie

Vol. 20, No. 2.—In a most interesting article (a paper read before the Munich Eugenics Society) Professor J. Lange discusses the relationship of the modern treatment of the insane to human degeneration. He specially points out the danger of the system of teaching young imbeciles and schizophrenics to gain their

living to some degree, and then of returning them to society.

He gives several examples of the recent increase of the mentally abnormal. A census of the insane was taken in the small principality of Lippe (N.-W. Germany) in 1804, and another in 1908. In the first there were 92 in a population of 70,000—.13 per cent.—and in the second 474 in a population of 150,000—.32 per cent. Alcoholism and syphilis are not common, so one must conclude that hereditary disease has increased. This is especially the case with schizophrenic insanity, and the like has also been observed in Switzerland (special researches in the canton of Appenzell and the very reliable medical examination of recruits for military service).

Considering that the mentally diseased often come from families with many children, the question becomes ever more urgent, how to check these stocks propagating in the way they actually do.

Discussion on the Inheritance of Otosclerosis.—The majority of the investigators believe this disease, which leads to deafness, to depend on recessive factors. Dr. Haike finds it a simple Mendelian recessive in most of the pedigrees he has studied. But in one, which he gives, there is an irregular dominance of the disease. It is not always possible to distinguish otosclerosis from certain alterations in the labyrinth of the ear which also lead to deafness. But Dr. Haike was able to make a post-mortem examination of one of the members of this family and to identify the true sclerotic symptoms.

M. A. v. H.

Biometrika

Vol. XIX, 1927.—T. L. Woo and Karl Pearson write on Dextrality and Sinistrality of Hand and Eye and reach views entirely opposed to those of van Biervliet, who thought that man is either dextral or sinistral, and that muscular sense, sight, hearing, and touch all go together in this respect. The sinistrals are roughly a quarter, and this has been held by some to suggest that the peculiarity is a Mendelian recessive, but pedigrees have not established this. The authors also demolish the idea that a supposed superiority of the right eye is the source of the widespread character of dextrality. They find no evidence whatever of even a correlation between ocular and manual lateralities, to say nothing of a master-eye determining which is the master-hand. For them lateralism, whether ocular or manual, is a continuous variate, and dextrality and sinistrality are not opposed alternatives.

Miss Tildesley gives an estimate of the thickness of flesh on the negro-skull which should help to link measurements taken on the living head with those on the skull. Her estimates are lower than those which Anderson worked out for Europeans; for she would deduct 7.3 mm.

from the length and 7.1 mm. from the breadth of the living head. K. Pearson and M. Moul find that the theory of general and specific factors of mental abilities is too narrow a structure to form a frame for the great variety of inter-relationship of those abilities; but they agree that it is a theory that has enough in it to be worth testing on new material and on larger numbers of persons.

The thyroid gland is such an important factor in many discussions of health nowadays that we welcome the biometric study provided by P. Stocks with the help of A. V. Stocks and M. N. Karn. After palpation the maximum breadth and height of each lobe were taken, and usually the heights were equal, though in a few the right was a little higher and in cases of enlargement sometimes tended to enlarge first; breadth is the important dimension. Enlargement was found to be a common feature of adolescent girls in the north and west of England, but much rarer in the London area. Goitre prevalence increases with age to a maximum in boys about 13 to 14, and in girls about 17 to 18, and then declines. Where goitre is not endemic the thyroid changes little from 10% to 13%, and this flattening of a growth curve before puberty is unique. In girls the rapid growth of the gland 13½ to 15 is doubtless associated with the onset of menstruation. Enlargements are a manifestation of an effort by the gland, only partially successful, to overcome a deficiency of some substance stored by the gland, and in this respect they are not essentially different in causation from the larger variety of goitre. In Cheshire it seemed that there was frequently a slight deficiency of iodine-intake. Symptoms of slight thyroid enlargement therefore tend to appear in those girls, especially, who need most thyroid for their growth—namely, in the best developed and quickly-growing girls. Where the deprivation is severe, as in parts of Kanton Bern, many girls are affected and those with goitre are often those who show retardation and general deficiency.

Morant finds that the Tasmanian skull is not nearer to one Australian type than to the other. He thinks all three are varieties of the same family of prognathous Oceanic races, but insists that theories of ultra-primitiveness are valueless.

H. J. F.

British Medical Journal

Feb. 25th.—In a case of bilateral polydactylism (supernumerary thumbs) there is an absence of hereditary history in three generations.

March 10th.—*A propos* of the Galton Lecture by Mr. C. J. Bond, which is fairly fully reported on February 25th, Dr. Binnie Dunlop considers that if a satisfactory standard of living is to be maintained in any country three factors are necessary, namely, high production, a low birth-rate, and eugenic selection. Hence his sociological formula—people must work their best, and must not

have more than two children unless they are above the national average in the advantages for parenthood. He assumes that if the less eugenic couples do not have more than two children the others will be proud to have larger families.

March 17th. High Infantile Mortality in Large Families in Vienna.—K. Friedjung (Wein. klin. Woch. Dec. 15th, 1927, p. 1578) records his observations on 100 working-class women in Vienna, each of whom has given birth to six or more children in the course of the last four years. The fertility of many of them was extraordinarily high; five had been pregnant 20 to 25 times, and and seven 16 to 19 times, and another twelve had had more than 15 pregnancies each. The whole series had had 1,033 pregnancies, ending in the birth of 885 living children and 148 miscarriages, so that each mother had an average of 10.33 births. Of the 885 living children, however, 330 had died by September 30th, 1927, so that, including the 148 miscarriages, 46.27 per cent. of the pregnancies had been a dead loss to the State. Of the 100 mothers only eleven had not lost a child, and 89 had lost one or more, as is shown by the following examples: one mother lost 16 out of 24 children born alive, and others lost 12 out of 19, 10 out of 13, 9 out of 11, 7 out of 9, 6 out of 8, and 3 out of 6. Of 115 living children born to nine mothers, 81 died and only 34 survived. The causes of the high mortality are to be found in overcrowding, lack of cleanliness and ventilation, and liability to infection, especially tuberculosis. In a considerable proportion of cases the death of a child was due to an accident owing to lack of proper supervision.

March 24th. Voronoff's Experiments on the Improvement of Livestock.—A delegation representing the Ministry of Agriculture visited Algiers last November to investigate Dr. Voronoff's testis grafting experiments in bulls and sheep. The conclusions of the delegates show that the results are very unconvincing. They allege that the experiments were not controlled with sufficient strictness, and the evidence of rejuvenation of aged and decrepit bulls, and of the increase in body weight and wool-clips in sheep is doubtful. The view that the improved characteristics can be inherited is regarded with scepticism. But it is suggested that further more critical tests might be carried out in this country.

April 7th. Etiology of Alcoholism.—A discussion at the Section of Psychiatry of the Royal Society of Medicine: Dr. Arthur Hadfield said that he thought that the majority of people who suffered from alcoholism—of the drug type—were people of a highly-strung temperament. This introduced an hereditary factor, because temperament was in most cases inherited, and there was also a physiological factor in which low blood pressure played a part. But the fundamental factor he believed to be a regression—there were people

with a fatal predisposition which prevented them from facing the difficulties of life simply because they had never grown up.

April 28th. Causes of Alcoholic Inebriety.—Drs. A. W. George and G. F. Vincent express the opinion, founded on the survey of many hundreds of patients who had passed through the two institutions of the Norwood Sanatorium, that "it is clear that heredity is a decided cause, not a mere conjecture." It is this hereditary influence, "the inborn soil ready for the seed," which has given rise to the rather exaggerated belief that the alcoholic is, before he even touches a drop, an abnormal person. There is another hereditary factor that also appears again and again—namely, that which is popularly called the 'nervous' or 'unstable' type of individual.

May 5th.—Dr. A. E. Carver denies that heredity is a decided cause of alcoholism. In his experience the hereditary factor when present is so accidentally, not causally. It would appear with at least equal frequency in a sample of the population taken in respect of any other affliction.

April 21st.—Commenting on the passage in the Province of Alberta of the Sexual Sterilization Bill, a leading article in this issue states: "It requires very little scientific knowledge or acumen to prophesy confidently that the results of the passage of the Act and its enforcement will be socially futile, if not harmful. . . . It is now well established that a considerable proportion of mentally defective persons are not in fact socially defective, and may safely be left in the general community with only a small amount of supervision; and it is found that those who are mentally and socially defective to a degree requiring segregation are, as a rule, happier in their safeguarded surroundings than in a community to which they feel themselves unsuited."

Mrs. Hodson replies in the issue of May 10th.
A. A. E. N.

Economia

May.—L. Franciosa discusses *The Distribution of the Population of Italy in the Agricultural Districts*. He takes six zones, the Alpine, including Piedmont, Lombardy, and Venetia, the northern, central, and southern Apennine regions, Sicily, and Sardinia, and divides each of these regions into three parts, a mountainous, a hilly, and a plain area. He then tabulates and comments on the distribution of the population, both absolutely and relatively in these regions. His tables are extremely clearly set out, and should prove of great assistance to anyone interested in the zoning of population by altitude, a problem to the study of which Italy particularly well lends itself. A paper of this type would have benefited tremendously by the addition of sketch maps, which unfortunately have

not been included. In the millennium perhaps editors will insist on this very necessary concomitant of geographical papers.

L. H. D. B.

Eugenical News

April.—Readers of this Journal should remember that *Eugenical News* contains many reviews of books and articles and reports of meetings which are of much interest. There are few better ways of keeping in touch with eugenical literature than to see this review month by month. It is not possible, however, to notice these reviews in this Journal, and readers may not, therefore, be aware of the interesting matter which *Eugenical News* contains, unless they look at it itself.

A note in this number gives some information concerning the Eugenical Sterilization Bill, which on March 6th of this year was passed by the Legislature of the province of Alberta. It apparently still needs the assent of the Lieutenant-Governor. If this assent is given, Alberta will be the first Canadian Province, and apparently the first province in the British Empire, to adopt the policy of eugenical sterilization. The Bill is, therefore, of no little interest. It provides amongst other things that, whenever it is proposed to discharge an inmate of a mental hospital, the responsible officer may cause such inmate to be examined by a Board. It further provides that, if as the result of the examination the Board is unanimously of opinion that the patient can be safely discharged if the danger of procreation be removed, the Board may direct that a surgical operation for sterilization be performed. The operation, however, is not to take place unless the patient has consented thereto.

Another note is concerned with a pamphlet issued by the Public Charities' Association of Pennsylvania, in which the activities of the Association from 1912 to 1927 are outlined. The Association has largely been concerned with the setting up of remedial and custodial institutions. In the course of this work the eugenic aspect of social inefficiency has become prominent, and as a result of this the influence of the Association has been frequently exercised in favour of proposals for eugenical reform.

A very interesting table sets out the immigration quotas as first estimated in 1924, and revised in 1927 and 1928. It will be remembered that these quotas are arrived at in the following manner: A "National origin" is assigned to each person in the 1921 census, and on this basis the proportion which each national group in 1921 bore to the total population in that year is worked out, and there is given to each national group a quota bearing the same proportion to the total immigration of 150,000 now to be allowed, as the whole group bore in 1921 to the total population. The interest of the matter lies in

the direction of the changes following upon these revisions. The British quota has been reduced from 85,000 to 73,000 to 66,000. The Irish quota has been raised from 8,000 to 13,000 to 17,000. The German quota has tended to go up. It may be said in general that as a result of revision it has been concluded that the English element in the population was originally put too high and that the surplus has been distributed among other national groups, the bulk of it going to the Irish.

Another note gives some interesting facts concerning the Committee on co-operation with clergymen. It is hoped that as a result of co-operation some valuable information may be obtained. The Committee is also offering prizes for the best sermons on eugenics.

May.—This number opens with a very interesting article by Dr. E. G. Conklin. He sums up the main points made by certain eminent writers in criticism of eugenics. The writers selected are Bateson, Castle, Morgan, Jennings, and Pearl. The points made by these writers are very clearly though briefly set out, and at the end of the article the author makes a comment on the criticisms. He agrees with the criticisms of some of the extravagant claims made on behalf of eugenics, but, putting them aside, he says that in his opinion the only justifiable criticisms of eugenics are as follows:

- (a) It is hopeless to expect to eliminate all but the eugenically best from the population.
- (b) Segregation or sterilization will merely prevent deterioration.
- (c) It is very difficult, if not impossible, to decide which traits are the best. It is nevertheless not difficult to decide which are the better and which are the worse. Finally, he states emphatically that in his opinion the differential birth-rate in favour of the poorer classes is unfavourable.

A. M. C-S.

Genetica

XIII. Linkage Studies in Rice. Lien Fang Chao. —The common species of rice has twelve (haploid) chromosomes, and its genetics might therefore exhibit twelve linkage groups. In the present study about twenty-five factors are found, and four linkage groups established. The characters affected are glutinous endosperm, awns, length of glumes and spikelets, and the colours of several organs. Genetical work on this species has only recently been undertaken, but it is already clear that it offers attractive genetical material, and that the work undertaken has been remarkably fruitful.

R. A. FISHER.

Health and Empire

March.—*Biology and Social Hygiene*, by Professor J. Arthur Thomson, is an example of this writer at his best. Without ever being

unscientific, he contrives to tell the facts of biology clearly and even attractively—if sometimes rather sentimentally. He deals with the trajectory of life and population, and is, in general, soundly eugenic. But it is a pity that, when considering the differential birth-rate, he should be so anxious to avoid making his readers' flesh creep as to leave the impression that the defective stocks are not multiplying as fast as the general population. Pearl's biology of population growth is well explained, and so is the biological relationship between high individuality and a low rate of reproduction.

Stray Notes on the History of Syphilis, by Louis W. Sambon, M.D., is an unusually interesting collection of facts and theories. Among the latter is the suggestion that the spirochaete can be carried from one human host to another by flies, fleas, and animals.

Dr. Sambon considers and dismisses the evidence of syphilis as a New World disease imported into Europe at the end of the fifteenth century. On the contrary, he shows it to be ancient and almost world-wide. The Egyptian evidence is of dubious value; but the Capuan exvotos of the third and fourth centuries B.C. clearly represent syphilitic symptoms. The disease was known in China as far back as Confucius, and was treated with mercurial and arsenical preparations. "Now it is met with from one end of China to the other in a mild form, long prevalence having brought about the development of a natural resistance such as is witnessed in Europeans with regard to tuberculosis"—as in Algeria, apparently, natural selection has at last achieved its ends.

E. M.

Hereditas

X.3. Hereditary Growth Anomaly of the Thumb. Olaf Thomsen.—The anomaly consists in a shortening of the terminal phalanx of one or both thumbs. A number of pedigrees are given suggestive of simple dominance with some uncertainty of manifestation. It is remarkable that the remaining fingers and toes and even the other phalanges of the thumb are of normal size. X-ray skiograms of children of about seven years old suggest that the anomaly is due to arrested bone growth in childhood, and that it could not be detected in infants.

R. A. FISHER.

Journal of Delinquency

Dec. 1927.—There is much that is interesting in this issue, but it is doubtful whether the articles published throw much light on the problems with which we have to deal in this country. In the domain of criminology, as in so many other fields, America is the land of experiment; but there are many reasons why it is difficult to draw conclusions which would be valid in Great Britain, from statistics of criminals in the United States, especially when these statistics are con-

fined to a single state or to a single prison.

These remarks apply in particular to the painstaking article by Carl M. Rosenguest on "The Occupational Status of the Texas Convict," which is a statistical study of the inmates of one prison—the Texas State Prison. The population of Texas, the social conditions there prevailing, the ethical standards adopted among different groups, and the attitude of some such groups towards "the law," are such as to render it difficult, if not impossible, to draw from them any conclusions that would apply to British criminals. There are in Texas three main groups among the population—the native American, the negro, and the Mexican—each of which has its own special outlook; and in each of them, no doubt, the general attitude towards the law is probably very different from that which prevails in more homogeneous communities. This difference of attitude moreover has probably been accentuated by such enactments as the Prohibition Laws, which many decent citizens consider they are justified in evading.

The article does not deal with the proportion of mental defectives among delinquents in Texas; but it is probably considerably lower than it is in countries where public opinion and respect for the law have a greater restraining influence.

The journal also contains a reprint of the "New Plan of Criminal Procedure presented by the Committee of the Los Angeles Bar Association." The title is somewhat misleading, as the paper deals only with procedure *after* conviction, and is not concerned with the steps leading up to that event. The aim of its author is to provide means by which the authorities may learn something of the character, natural endowments, and previous history of the offender, and then apply to him the form of treatment which appears to be most suitable to his particular case. Space does not permit of a detailed examination of the proposals; but it may be said that they embody the excellent principle that in inflicting punishment the Courts ought to consider with the greatest care what a man *is*, instead of concentrating exclusively on *what he has done*. The psychologist, the physician, the social worker, are, therefore, all to be pressed into service, together with such others as are likely to be able to assist the Courts. The plan then provides for the segregation of the prisoners according to their ability to react to corrective and rehabilitative treatment. Thus, the mentally defective are to be separated from the insane and neurologically sick, and both classes from the ordinary criminals; and these latter are again to be subdivided according to the chances of their responding to efforts to reclaim them. The aims of the authors are excellent, and their principles appear to be sound; how far their proposals are practicable is a different matter.

R. E. MOORE.

Journal of Heredity

January.—*The Inheritance of Human Skeletal Anomalies*, by Bess Lloyd Milles, starts off with the excellent quotation from Morgan, "in studying the inheritance of each defect we are also studying the inheritance of the normal character."

Mr. Milles goes on to give pedigrees of the rare anomaly, cleido-cranial dysostosis. It appears usually, though not always, to be a dominant Mendelian character; and the same is true of depression of the obelion, which is also studied. Hare-lip and cleft palate "cannot be explained on the basis of simple Mendelian inheritance," nor as "congenital or hereditary, from the data at hand, although both causes seem to be represented." It is often associated with other anomalies which are, in some cases, hereditary—polydactylism, syndactylism, club-feet, and dislocations of various kinds.

"At least 12 per cent. of cases of congenital dislocation of the hip appear to be due to hereditary shallowness of the acetabulum. Brachydactylism is referred to, and three different types of polydactylism are given. While the last can be a purely congenital character, it is usually strongly inherited in one or other of the three forms. The mode of inheritance—or of development—is not quite clear. Mr. Milles inclines to call it an "incomplete or suppressed dominant."

February.—There is a brief account of the "Heredscope" an ingenious new contrivance for demonstrating the principles of Mendelism, and also an examination by Paul Popenoe into the fecundity of the insane in California. He concludes that it is below average and that they are not maintaining their numbers. He points out, however, that the sane carriers of insanity may be more fecund and hence dysgenically dangerous. The article should be read: it requires more critical attention than space here allows.

April.—Investigating *Religion and Family Size*, Roland M. Harper found that in Tallahassee (U.S.A.) the "most aristocratic" sect had the highest proportion (57.5) of adults to children, while the least aristocratic had the lowest (50.9). The two intervening sects had 56.5 and 53.0.

E. C. Rowe tells of some interesting triplets, the product of a 'twinning' stock. Bar the sex difference, they appear at first to be 'identical,' yet clearly are not. Maurice has consistently kept ahead, in physique and mental age, of Clarice, while she has kept ahead of Phyllis.

E. M.

Mental Hygiene

January. *State Institution Population Still Rising*. Horatio M. Pollock.—The preliminary results of the first annual Census of State institutions taken by the Federal Census Bureau were made available for publication in October, 1927. This Census included State hospitals for mental

disease and for the feeble-minded, and State prisons and reformatories. The striking feature of the report is the marked increase in the population of all three classes of State institutions, a rate far exceeding that of the general population, which makes it evident that the burden of mental disease, defect, and crime borne by the State is continually becoming heavier. Tables are given in this article of all these categories in thirty-one States, comparing the figures with the 1923 Census. In mental disease the increase is from 218.5 per 100,000 of the population to 226.9. For epilepsy and mental deficiency the increase is from 47.0 to 54.7, but this does not in any way represent the true increase, as we are aware that the shortage of institution accommodation is as severe in America as it is in England.

The most serious increase is in the residents in State prisons and reformatories, the number having risen from 66.6 per 100,000 to 84.1.

E. I. C.

Mental Welfare

April. *Mental Defectiveness, as defined by the Act of 1927*. A. F. Tredgold, M.D.—This is a useful and informative article giving a comprehensive description of all classes coming within the meaning of the Act and the reasons for the alteration of "from birth or early age" to "before 18 years of age" for certification purposes. Dr. Tredgold considers that the number of mental defectives in the country exceeds the number of the insane, and represents at least 8 per 1,000 of the total population. He estimates that four-fifths of these are primary aments, and owe their condition to impaired germ cells, and that only in one-fifth is the cause a secondary one, such as birth-injury or certain forms of disease.

E. I. C.

Metron

March.—W. T. Russell contributes *A Study of Irish fertility between 1870 and 1911*, with the object of trying to throw some light on the cause of the decline of the birth-rate in most European countries. Three possible causes have been postulated: (a) physiological, (b) economic, and (c) volitional. The first is chiefly advocated by Brownlee, and to some extent by Gini; the second by Yule; and the third by the majority of writers on the subject. As the Roman Catholic Church is definite in its hostility to birth-control save by continence and recourse to the "tempus ageneseos," the writer has thought that a study of fertility in Ireland, in which the Roman Catholic influence is so powerful, would assist in coming to a conclusion. He adopts the measure of fertility employed by Newsholme and Stevenson, taking the fertility at various ages in Sweden as the standard.

The result is that the fertility of the whole of Ireland has been remarkably constant over the

whole period from 1870-1912, showing a fall of 4 per cent. in the decade 1880-82, but rising afterwards to slightly over its initial value. Taking the four great divisions of Ireland, Leinster with 86 per cent. of Catholics shows a rise of fertility of 3 per cent.; Munster, with 94 per cent. of Catholics, shows a rise of fertility of 5 per cent.; Connaught, with 95 per cent. of Catholics, shows a rise of fertility of 22 per cent.; Ulster, with only 49 per cent. of Catholics, shows a fall of fertility of 6 per cent.

The county with the smallest percentage of Catholics (25) is Antrim, in which the fertility has fallen 8 per cent.; but Armagh, with 45 per cent. of Catholics, has the highest decline of fertility (19 per cent.). There is, therefore, no definite relation between the proportion of Catholics and variation of fertility. But in Sligo, with 90 per cent. of Catholics, and Galway, with 97 per cent., the increase of fertility has been 47 and 30 per cent. respectively. Wales, which is included for comparison, shows a fall of fertility of 29 per cent.

The author is unable to draw any definite conclusions from these figures. He does not regard Brownlee's hypothesis as proved, although some of the variations may possibly be explained by it. He thinks that political and racial feelings play a part in the maintenance of fertility in Antrim and Down, and doubts the effect of Catholicism when comparing Protestant Irish counties with Wales. It should be borne in mind, however, that so far as is known there has been no birth-control propaganda of any importance in Ireland, and that the Protestant Church has been no less emphatic in its condemnation of it until recently. It is not unlikely that this attitude still prevails in Ireland, but the figures clearly show that on an average the more Protestant countries have exhibited a decline in fertility. On the whole it would seem probable that this decline, like that of other countries, is mainly volitional.

C. V. D.

Monthly Notes

April. Children's Allowances.—Henry S. Huntington writes that in America "ministers born between 1850 and 1865 had, next to missionaries, the largest families of any professional or business class. The size of the families of missionaries declined parallel to those of the clergymen in the case of the men born up to 1869, but has fallen off very little for those born since then, whereas the families of clergymen born since then have dropped off rapidly, until they now average about the same as those of professional and business men. . . . The missionary has all the advantage. For him and his wife the coming of the baby involves no expense, missionary physicians . . . nurses . . . hospital give their services. Then the mission boards—at least the American and Canadian ones—grant

extra salary allowances for each child as soon as it is born. The allowances for the first year vary from \$50 to \$200, or often 10 per cent. of the salary. So a family is no worse off economically after the arrival of the child than before. Indeed, when the children are mere babies the allowance may more than pay for the extra expense. After the age of six to ten the allowance usually increases by one-half, and yet further when the child is of boarding school and college age. Other special allowances, such as those for travel, prevent the child from being an economic burden. In this child allowance lies most, if not all, of the explanation of the great difference that now exists in the size of missionaries' and ministers' families."

E. M.

Nature

April 14th.—Two letters occur from Marlborough and Eton on the teaching of science in schools. In neither is there any special emphasis on the needs of teaching biology, though it is pleasing to notice that Mr. Goard includes this as an adequate introduction, when properly handled, to the scientific attitude and scientific method of attack, which he considers the chief argument for early scientific training.

April 21st.—This issue contains a supplement on light therapy and ultra-violet rays. In the main it is just an enumeration of work done, and does not go into any of those more profound biological changes which would be of interest to eugenicists.

April 28th.—On page 673 there is a very interesting letter from Olson and Gilbert and Lewis, on *Induced Germinal Changes by X-Ray work*. They describe experiments on the tobacco plant. They conclude from their work "that the number of variants caused per year in the tobacco plant by natural radiation is more than 2 per 1,000. It seems, therefore, not altogether extravagant to assume that such variations as actually occur in Nature are due largely to the radioactivity of the environment. It becomes an extremely interesting task to ascertain whether, in those places where an exceptional accumulation of radioactive material occurs, any unusual variability of fauna and flora is to be observed."

May 5th.—Contains a résumé of a report on Dr. Serge Voronoff's experiments on the improvements of live stock, issued by the Board of Agriculture, which our readers will have the opportunity of watching elsewhere.

C. B. S. H.

Physiological Abstracts

Vol. XI, No. 9. 2986.—H. A. Harris records E. C. Macdowell's and E. M. Lord's experiments on mice. The *corpora lutea* are examined and counted by a binocular magnifier following a dorsal incision in the last week of pregnancy.

The subsequent birth of the litter is normal. This operation has been repeated as many as ten times on a given mouse. From 840 litters it is shown that there is no relationship between the total prenatal mortality and the sex-ratio, so that there is no selective elimination of one sex or the other before birth.

Vol. XI, No. 10, 3364.—J. Needham records A. S. Parkes's conclusion that the mammalian sex equality ratio, though an anomaly, is of long phylogenetic history. Sex differentiation follows chromosomal constitution. The ratio, owing to selective mortality, changes both before and after birth, and these changes are discussed.

Vol. XI, No. 11, 3806.—F. A. E. Crew records M. F. Guyer's experiments on the transmission of an induced eye defect in the rabbit. While not claiming definitely to have proven the inheritance of an acquired character, Guyer states that the distinction between soma and germ has often been over-emphasized, and that the germ-cells are protoplasmic complexes not essentially different from those of the somatic cells. From this it would follow that germ-cells cannot be regarded as insusceptible to the chemical or other physiological influences within the body.

3819.—F. A. E. Crew records W. Berndt. The ornamental goldfish bred in aquaria are domesticated dwarf and monstrous races whose characters are partly hereditary (i.e., due to a mutation of the germ-plasm), partly non-hereditary, "diffuse", degenerative. The latter may be due either to a prolonged degenerative influence (domestication), continued through many generations, analogous to the effects of alcoholic or other poisoning; or else they may be regarded as a manifestation of the hereditary fixation of a lowered level of response to the abnormal environmental conditions. On crossing back to the original form, the mode of inheritance of the single characters is the same as when the fancy races are interbred.

3825 and 3826.—F. A. E. Crew records C. E. Lauterbach and K. Bonnevie and A. Sverdrup on human twins. Those of like sex show a greater degree of resemblance to one another than twins of unlike sex or other sibs; twins of unlike sex show the same degree of resemblance as other sibs. Age has no effect on the degree of resemblance. There is no evidence to show that twins are intellectually handicapped. Left-handedness is closely associated with twinning. A statistical analysis of the data warrants a classification of all twins into two main groups, according to the degree of resemblance which lends support to the theory of monovular and binovular origin of twins.

Results of statistical studies of the occurrence of twinning in two districts of Norway indicate that twin births are not evenly distributed, but accumulate in certain families, and within these

on certain lines. The numbers of mono- and dizygotic twin births, calculated according to Weinberg's method and arranged according to the age of the mother, demonstrate that the hereditary character involved in these cases is a predisposition for dizygotic twin births—i.e., a double ovulation. No evidence has been found indicating that mothers of twins are women with the highest fertility, although fertility seems to be somewhat higher within twin families than in the whole population.

3833.—F. A. E. Crew reviews F. Freund. Bare-neck in fowls, once thought to be an instance of the inheritance of an acquired character, must have arisen as a mutation. It is not due, as was thought, to *dermatitis erythematosa*, but to a *corpus spongiosum* similar to those in the comb and wattles of all fowls.

E. W.

The Queue

April.—*What is Capacity?* is the first of a series on heredity and environment by W. Hope-Jones. As one would expect, he gets straight off the mark, and deals with his subject in a vein of racy, colloquial humour. Clear and refreshing.

E. M.

Social Forces

(English Agents: Balliere, Tindall & Cox.)

March.—*Organic Plasticity versus Organic Response* is a really first-rate article by Professor H. Hawkins. Seldom have the complementary roles of heredity and environment been so closely defined. "While . . . the nature of the . . . organism and the character of the environing conditions are essential sets of courses, the former has a more fundamental significance than the latter. It is the former which determines what conditions shall be reacted to; and how they shall be reacted to both as to kind and extent of reaction." Again—"Culture is a human mental product . . . always and everywhere an expression of such minds which in turn is reabsorbed and reacted to by the succeeding generations more or less differentially. . . ." And again—"A highly intelligent man of to-day differs more from a highly intelligent knight of the Round Table than a moron of to-day differs from a moron of a thousand years ago. But the high intelligence is also more individual, more dynamic, more certain to make something peculiarly its own out of the resources at hand."

Frank W. Hoffer's article on the *Public Care of Children* contains some good illustrations of how bad homes produce bad children, but does not enter into the question of how far this is due to biological or social inheritance.

P. K. Whelpton in *Industrial Development and Population Growth* arrives by interesting, if dubious, methods at the conclusion that the industrialization of the United States has checked natural increase.

E. M.

Time and Tide

THIS weekly journal has been running a series of articles on the population problem. Professor Raymond Pearl led off with a brief sketch of the history of the study, an outline of the salient problems, and an account of his own experiments upon the biology of population growth. Professor Edwin Cannan followed, expressing a belief that contraception controlled population growth, and a hope for smaller populations. Dr. F. A. E. Crew emphasized that "reproduction is merely incidental to marriage," and made an appeal for selective breeding.

Mrs. Margaret Sanger expressed the belief that the qualitative aspect of the population problem is now taking precedence of the quantitative. Dr. Letitia Fairfield's plea, "The Need for Birth-Controller Control," is more amusing than sound. Besides asking the usual question, "Who are the right people to breed, and who the

wrong?" she implies that the dependent poor are desirable, and that mental deficiency is decreasing. Her figures for the latter simply refer to M.D.'s *under control* in London. She also definitely states that crime is decreasing, which is not correct (*vide* Carr-Saunders and Caradog-Jones, *The Social Structure of England and Wales*). There are other inaccuracies, large and small.

E. M.

World To-day

May.—*Birth Control or Race War*, by H. K. Norton, is a survey of the international problems which will arise as such nations as Italy and Japan expand and demand more land. An attempt is made to discover the ethics of the situation on the principle that "Population should be adjusted to territory and not territory to population."

E. M.



CORRESPONDENCE

NATURAL SELECTION—A CORRECTION

To the Editor, *Eugenics Review*

SIR,—There appeared in January, 1927, in this *Review* an article by me on Natural Selection, which, I regret to say, I now perceive contained an illogical argument, though luckily the conclusions arrived at still seem to me to be correct. My error depended upon fixing my attention on the question whether a particular individual in a differentiated series of organisms belonging to the same species was above or below the average in regard to the quality under consideration, and in not observing that when any two individuals, for example, are competing in the struggle for existence, the elimination of the inferior organism would be an advantage to the species however much both of them might be below the average. Had I now to write that article again, I should omit most of page 287, and substitute the following paragraphs, which I hope you may find space to insert. I think they will be intelligible standing alone:

In order more fully to meet this point as to survival value, it is necessary to consider more in detail how natural selection can act on such a differentiated series. We have seen that qualities are generally dependent on several genetic factors, and that the degree of variability of such qualities is limited by the frequency of the occurrence of mutations on the one hand and by the pruning effect of natural selection on the other. The fur

of animals, for example, may be too thick in summer and too thin in the winter, a compromise being slowly established by nature. Thus far we have, however, only considered each *quality* of the organism as if it could be studied without reference to other qualities. Take the colour of the blood, for example, and it seems probable that if a mutation were to occur tending to cause a considerable change therein, this would be fatal or gravely injurious to the animal; because it would be the result of a change of chemical composition which might have serious effects on the brain or lungs. Such injurious mutant qualities would not be passed on to succeeding generations, and the action of natural selection in such cases would therefore result in the range of variation of the quality in question being kept within narrow bounds. In fact, the narrower the differences between one quality and any other independently varying quality, beyond which such differences become seriously harmful, the less will be the amount of variability found to exist in that quality. And it is obvious that the less the variability, the slower will be the action of natural selection; for not only will each step in advance necessarily be small when the variability is small, but the greater the similarity between the competing organisms in regard to any quality, the more likely will it be that survival will be decided with reference to some other quality.

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The World's Children. 26, Gordon Street, W.C.1.
World's Health. League of Red Cross Societies, 2, Avenue Valasquez, Paris, 8.
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